

**Title** Chilling manipulations: studying the molecular regulation of vernalization in lily  
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### **Abstract**

In lily (*Lilium longiflorum*), bulb vernalization is not only an obligatory requirement for flowering, but also the most important factor affecting flowering time and flower quality. However, the molecular regulation of the response to vernalization and of floral transition remains largely unclear in lily. Evidence mainly obtained from distant plant species indicates that the general pattern of the vernalization response, namely a floral repressor inhibited by cold exposure, is conserved. Yet, the type of genes involved in the process differs between species. We used a differential expression approach to identify candidate genes involved in the vernalization response in lily. Lily bulbs were vernalized at 4°C (V) or kept at 25°C (Non Vernalized, NV) for 9 weeks. Subtraction libraries were generated to detect differentially expressed genes from V and NV meristem tissues. Clone sequences were analyzed using annotations databases. Overall transcription - amount of mRNA from total RNA - was much higher in V than in NV meristem tissues. Also, the proportion of genes with homology to known genes was about 10X higher in V meristems, as compared to NV meristems. Clones from the subtraction libraries showed homology to genes involved in dormancy, chromatin modification and floral transition. This study represents a first step towards elucidation of the molecular regulation of vernalization in lily, and addresses fundamental questions regarding the conservation of the vernalization response among higher plants.